mini DISP2

ALARMS AND MESSAGES DISPLAY
User's Manual

Release – January 2007

DUEMMEGI
HOME AND BUILDING AUTOMATION
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INDEX

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1 - INTRODUCTION

The ***mini DISP2*** by **DUEMMEGI** is a device allowing to report, in a customized way, messages for controlling purposes in many applications, such as industrial and domestic plants. Thanks to the flexibility of this device, the ***mini DISP2*** unit make easy to understand any information related to the occurrence of alarms or events. This device may be employed in several applications as listed in the following examples:

- ✗ Machinery
- ✗ Industrial processing
- ✗ Plants
- ✗ Building automation
- ✗ Home automation
- ✗ Alarm signaling

Mini DISP2 device may be set by the user for operation with direct inputs (up to 16 messages) or for operation with binary code input (up to 255 messages).

2 - mini DISP2: MAIN CHARACTERISTICS

- ✗ LCD display 2 x 16 characters with back-lighting
- ✗ LCD contrast may be adjusted by the pushbuttons on the front panel
- ✗ Messages programming by front panel pushbuttons or by PC
- ✗ Messages and parameters stored into ***mini DISP2*** memory can be read by a PC
- ✗ The inputs can be insulated by means of internal photo-couplers
- ✗ 16 messages direct mode or 255 messages binary mode
- ✗ In direct mode each input may be set for NO or NC operation
- ✗ Up to 255 messages, each one made by 2 main lines and 2 hidden lines
- ✗ 1 base message made by 2 lines (stand-by message)
- ✗ 1 alarm pending message made by 2 lines
- ✗ Cyclic displaying of more messages; the cycle time may be set by user in the range 1 to 10 seconds
- ✗ Events storing (MEM) or current status display (NOMEM)
- ✗ Events are displayed in chronological order (up to 64); information message reporting the total amount of pending alarms
- ✗ Internal buzzer for acoustic alarm signaling; the buzzer operation may be disabled
- ✗ 2 potential free contacts (internal relays) for additional acoustic/visual signaling (siren and flasher)
- ✗ 2 inputs for remote ACK and RESET commands
- ✗ Keyboard lock to avoid unwanted operations by unauthorized personnel

The firmware of ***mini DISP2*** device may be updated directly by the installer through a PC and the RS232 communication port; this feature allows future developments of the product concerning new functions and possible special versions. For more details about this feature, contact **DUEMMEGI** commercial office.

3 - CONNECTIONS

The Figure 1 shows the wiring diagram of ***mini DISP2*** for the 16 messages direct mode with uninsulated inputs.

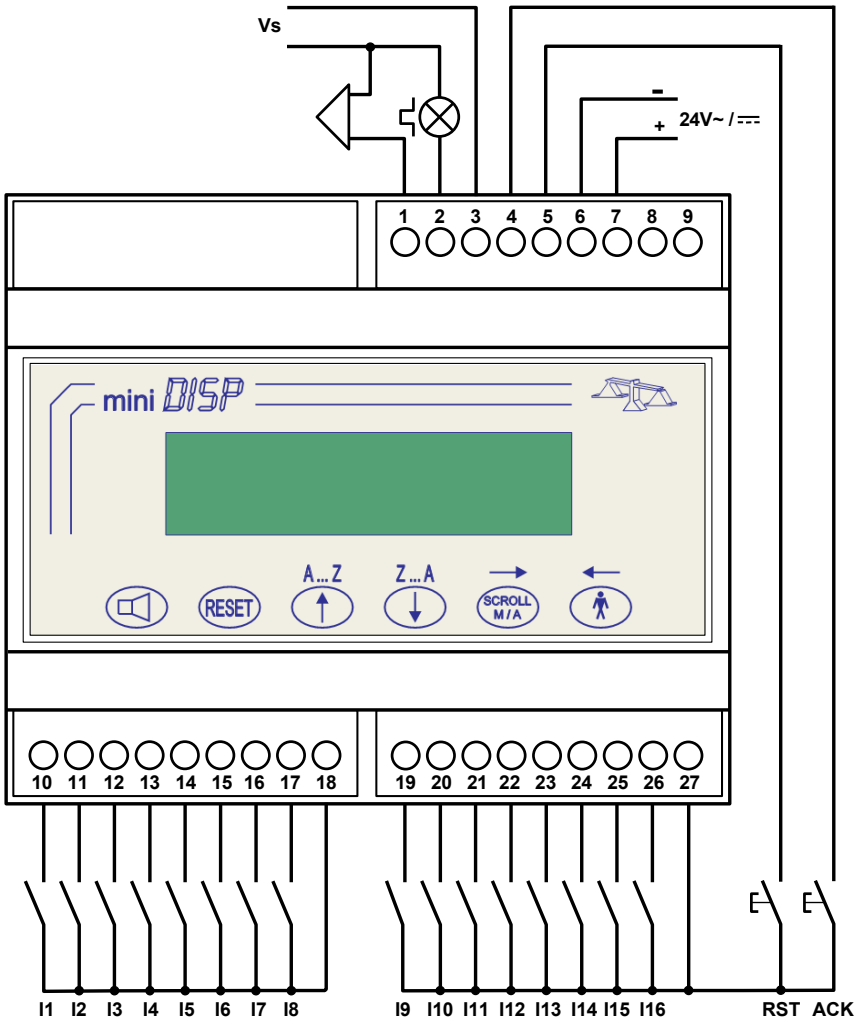

Figure 1: Wiring diagram for uninsulated input

The terminals of ***mini DISP2*** devices have a different meaning depending on the chosen setting among direct and binary mode. The two following tables list the meaning in these two cases.

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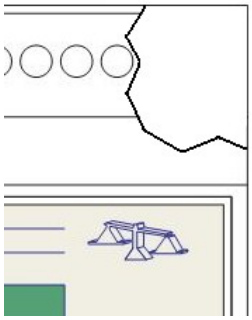
3.1 - mini DISP2 set for direct inputs

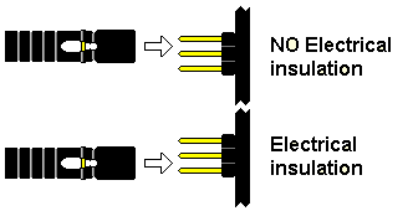
Terminal	Function
1 - 2 - 3	Terminal 1: N.O. contact for connection to external alarm device (e.g. siren) Terminal 2: N.C. contact for connection to external alarm device (e.g. flasher) Terminal 3: common of contacts at terminals 1-2 Note: As the flasher output is a N.C. contact, the flasher will be activated if the supply shuts down.
4	Input for remote acknowledgment (ACK) push button.
5	Input for erasing the message queue from a remote RESET pushbutton. The RESET confirmation must be done within 3 seconds pushing the acknowledge (ACK) pushbutton.
6 - 7	24 Vac/dc ± 20% supply voltage (for DC supply voltage, the terminal 7 is the positive and the terminal 6 is the ground).
8	This terminal allows the electrical insulation of the inputs (see next paragraph and the schematic diagram in the figure 2); connect this terminal to 0V of the external voltage source used to supply the input terminals.
10 ÷ 17	Input terminals (for potential free contacts) from 1 to 8: each input is activated applying a positive voltage to the related terminal; if the electrical insulation of inputs is not needed, then terminal 18 or 27 must be used to supply the inputs (through free potential contacts). The status of each input, to be accepted, must be stable for 50 msec minimum.
19 ÷ 26	Input terminals (potential free) from 9 to 16. See the previous point.
18 - 27	Positive voltage output to be used to supply the contacts connected to the inputs (this terminals are internally connected together).

3.2 - mini DISP2 set for binary code input

Terminal	Function
1 - 2 - 3	Terminal 1: N.O. contact for connection to external alarm device (e.g. siren) Terminal 2: N.C. contact for connection to external alarm device (e.g. flasher) Terminal 3: common of contacts at terminals 1-2 Note: As the flasher output is a N.C. contact, the flasher will be activated if the supply shuts down.
4	Input for remote acknowledgment (ACK) push button.
5	Input for erasing the message queue from a remote RESET pushbutton. The RESET confirmation must be done within 3 seconds pushing the acknowledge (ACK) pushbutton.
6 - 7	24 Vac/dc ± 20% supply voltage (for DC supply voltage, the terminal 7 is the positive and the terminal 6 is the ground).
8	This terminal allows the electrical insulation of the inputs (see next paragraph and the schematic diagram in the figure 2); connect this terminal to 0V of the external voltage source used to supply the input terminals.
10 ÷ 17	Input terminals for binary code from 1 to 8: each input is activated applying a positive voltage to the related terminal; if the electrical insulation of inputs is not needed, then terminal 18 or 27 must be used to supply the inputs (through free potential contacts). Each applied binary code recall the related message; the last significant bit is the input terminal 10, and the most significant bit is the input terminal 17. The applied binary code at terminals 10 ÷ 17 will be read when STROBE input is activated. The status of each input, to be accepted, must be stable for 50 msec minimum.
19 **STROBE**	The binary code input is read when STROBE input is active (positive voltage applied to this terminal).
22 **CLEAR ALL + STROBE**	Clear the whole messages queue when a positive voltage is applied both to this terminal and to the STROBE terminal.
23 **CLEAR ALL**	Clear the whole messages queue (regardless of the status of STROBE input).
24 **CLEAR ONE + STROBE**	At the STROBE activation, the message related to the binary code currently applied to inputs 10 ÷ 17 will be removed
18 - 27	Positive voltage output to be used to supply the contacts connected to the inputs (this terminals are internally connected together).

3.3 - Electrical insulation of the inputs





The inputs may be electrically insulated from other ***mini DISP2*** circuits; to do this, move the internal jumper a shown in the second case of the figure on this left side and see the wiring diagram shown in Figure 2.
If the electrical insulation is not needed, move the jumper as shown in the first case of the figure on this left side.

The factory setting of this jumper is for NO electrical insulation.

To access this jumper, the terminal cover numbered 1 to 9 has to be removed, helping yourself by a small screwdriver.

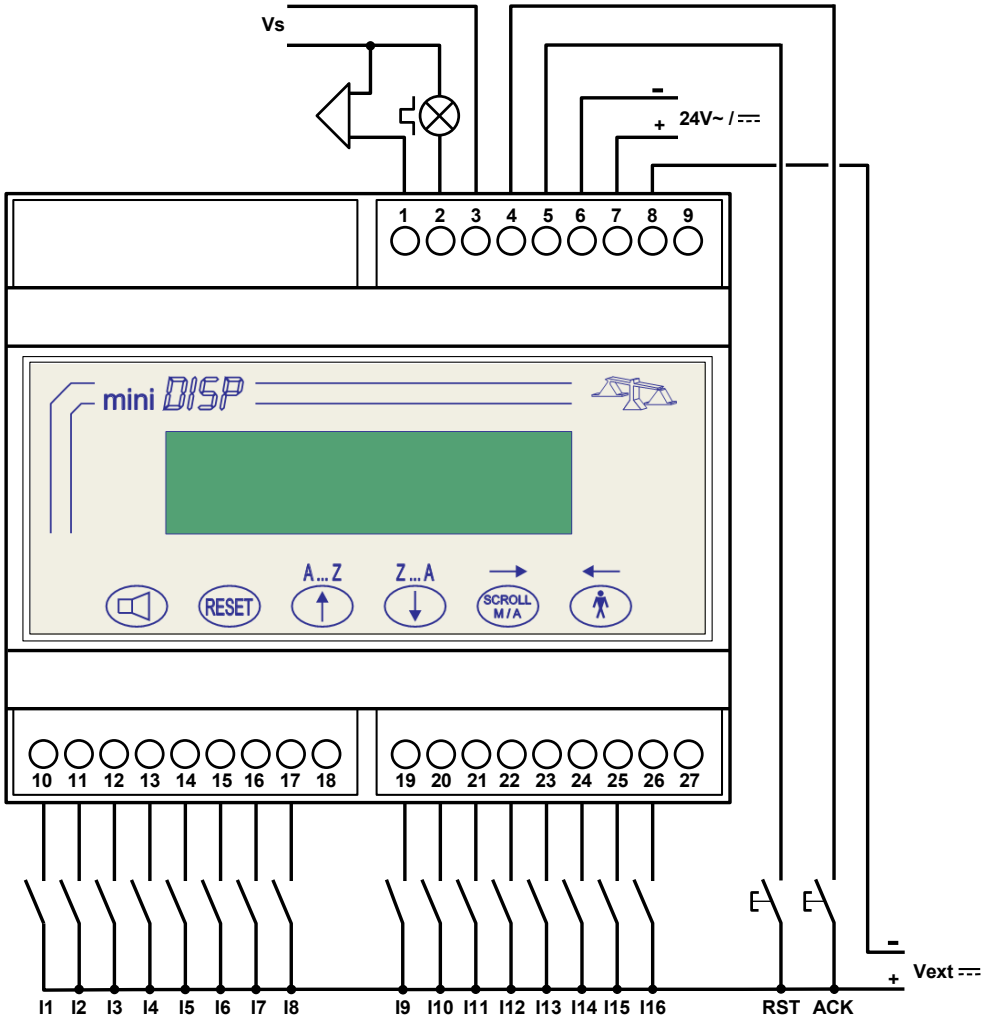
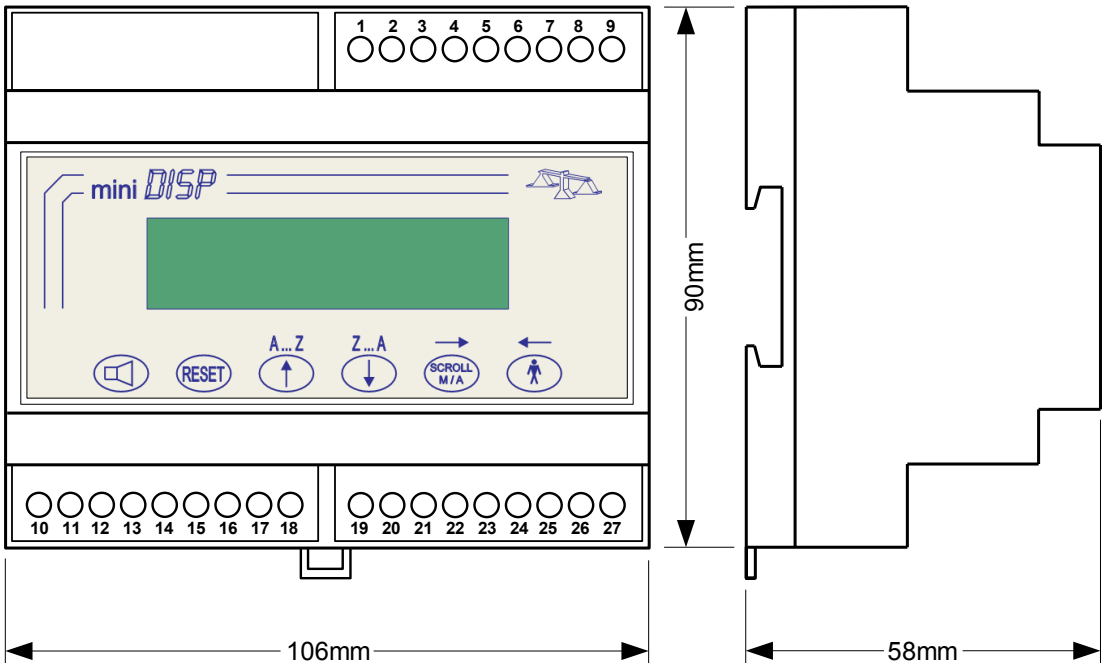


Figure 2: Wiring diagram for insulated input

4 - OUTLINE DIMENSIONS



5 - TECHNICAL DATA

Power supply	24V ~ / ⎓ ± 20%
Current consumption: at 24V ⎓ at 24V ~	 150mA MAX 250mA MAX
Input current (each input)	5mA @ 24V ⎓
Allowed voltage on the inputs	12 ÷ 30V ⎓
Output contacts: Max switching voltage Max switching current Max operating power	 60Vdc or 125Vac 1A 30W dc – 60VA ac
PC interface	RS232C full duplex opto-coupled
Display	LCD with back-lighting
Characters (each line)	16
Lines	2
Characters height	3 mm
Number of messages	In direct mode: 16 x 4 lines + 1 x 2 lines (stand-by message) + 1 x 2 lines (pending messages) In binary mode: 255 x 4 lines + 1 x 2 lines (stand-by message) + 1 x 2 lines (pending messages)
Connections	By removable terminal blocks
Protection degree	Front: IP 53 – Back IP20
Operating temperature	0 ÷ +50°C
Storage temperature	-10 ÷ +70°C

6 - OPERATING OPTIONS

6.1 - Direct or binary mode

Mini DISP2 may be set for two distinct operation modes, each one corresponding to a different handling of the information coming from the inputs as here explained.

- ➔ **16D**: the 16 inputs are handled one by one in direct mode; this means that each input is related to a well defined message. The amount of messages, in this mode, is 16.
- ➔ **255B**: the inputs 10…17 are handled as binary code (input 10 is the less significant bit and input 17 is the most significant bit); this means that each code is related to a well defined message. The amount of messages, in this mode, is 255.

The setting of the direct/binary mode can be done only by the configuration program running on the PC.

6.2 - Alarm outputs

Each message of ***mini DISP2*** (regardless of direct or binary mode) may be set to cause or less the activation of the 2 centralized alarm outputs (siren and flasher) and of the buzzer (if enabled). In other words, the difference between the two settings only concerns the handling of the two centralized alarm outputs (siren and flasher) and the buzzer (if enabled): a message having the alarm outputs enabled will cause the activation of siren, flasher and buzzer, while a message having the alarm outputs disabled will not cause any action on these devices. This can be done only by the configuration program running on the PC.

6.3 - Display contrast

The contrast of the LCD display may be adjusted according to the user preferences.
To execute this adjustment, enter in the ***mini DISP2*** setting menu pushing down at the same time the buttons  +  +  and move in the menu until the ***DISPLAY CONTRAST*** parameter is reached using the buttons  and  . To modify the displayed parameter refer to paragraph 8.1. The setting of this parameter can be done through the keyboard on ***mini DISP2*** front panel or by the configuration program running on the PC.

6.4 - Memory option

MEM (memory): the input activation occurrence will be stored; in other words, the related message remains in the queue even if the input has been de-activated.
NOMEM (no memory): the displaying cycle shows the current condition of the inputs; this means that each message will be automatically removed from the queue when the related input is de-activated.

The cyclic displaying occurs both in **MEM** and **NOMEM** mode, but in the first case ***mini DISP2*** shows all messages related to the inputs activated after the last reset, while in the second case ***mini DISP2*** shows only the messages currently activated.
To modify this option, enter in the ***mini DISP2*** setting menu pushing down at the same time the buttons  +  +  and move in the menu until the ***MEMORY OPTION*** is reached using the buttons  and  . To modify the displayed option refer to paragraph 8.1. The setting of this option can be done through the keyboard on ***mini DISP2*** front panel or by the configuration program running on the PC.

6.5 - Buzzer option

BUZZER ON: this option enables the buzzer inside ***mini DISP2***. This is a global option, because it applies to all messages. The buzzer, if enabled, follows the status of the siren relay.
Note: the buzzer, as for the siren and flasher outputs, will be activated only for the messages that were configured for this function.

BUZZER OFF: this option disables the buzzer inside ***mini DISP2*** for all alarm messages (but siren will be however enabled).
To modify this option, enter in the ***mini DISP2*** setting menu pushing down at the same time the buttons + RESET + and move in the menu until the ***BUZZER OPTION*** is reached using the buttons and . To modify the displayed option refer to paragraph 8.1.
The setting of this option can be done through the keyboard on ***mini DISP2*** front panel or by the configuration program running on the PC.

6.6 - Cycle time

This parameter identifies the time between the displaying of a message and another one. Allowed values are in the range 1 to 10 seconds, with 1 second step. To modify this parameter, enter in the ***mini DISP2*** setting menu pushing down at the same time the buttons + RESET + and move in the menu until the ***CYCLE TIME*** is reached using the buttons and . To modify the displayed parameter refer to paragraph 8.1. The setting of this parameter can be done through the keyboard on ***mini DISP2*** front panel or by the configuration program running on the PC.

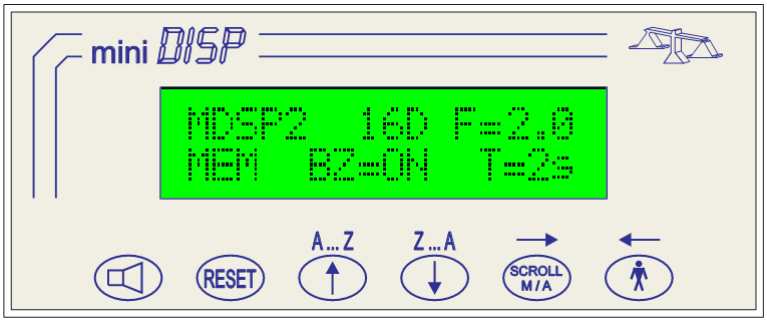
6.7 - Input logic:

When ***mini DISP2*** is set for direct mode operation, the input logic, for each one of the 16 inputs, can be set to normally open logic (identified by "O", the message will be shown at the contact closing), or normally closed logic (identified by "C", the message will be shown at the contact opening).
To modify this option, enter in the ***mini DISP2*** setting menu pushing down at the same time the buttons + RESET + and move in the menu until the ***SET NO/NC*** option is reached using the buttons and . The display will show a sequence of 16 symbols "***O***" and "***C***" (respectively for N.O. and N.C. setting); the first symbol on the left side is referred to input 1, the last symbol on the right side is referred to input 16. To modify the displayed options refer to paragraph 8.1. The setting of this option can be done through the keyboard on ***mini DISP2*** front panel or by the configuration program running on the PC.

7 - OPERATION

At power up, ***mini DISP2*** shows for 2 seconds about the current setting as here bottom listed:

1. on the first line: MDSP2, direct (16D) o binary (255B) mode, firmware release (e.g. 2.0)
2. on the second line: memory (MEM) or no memory (NOM) mode , buzzer enabled (BZ=ON) or disabled (BZ=OFF), cycle time (e.g. T=2s)



When no messages are pending, the stand-by message is displayed (line 1 and line 2 of the message zero). At the activation of an input, the related message will be recalled from the internal memory and shown on the display (line 1 and 2).
This message will be cyclically displayed together to the alarm pending message (line 3 and line 4 of the message zero) with a time period chosen by the user in the range 1 and 10 seconds.

Pushing the button during the displaying of a message, the line 3 and 4 of the message itself will be shown.

Pushing the button SCROLL M/A when one ore more messages are pending, it is possible to change between automatic and manual displaying; in manual mode, it is possible to display the previous and the following messages using the buttons ↑ (next message) and ↓ (previous message). To restore the automatic scrolling of messages push the button SCROLL M/A. If another input is activated, the related code will be added to the displaying cycle (queue) and the scrolling is always restored to automatic mode. All pending messages will be displayed in chronological order as they occur. The first message after the alarm pending message is the first occurred event, the next one is the second and so on. The number on the bottom left side in the alarm pending message is the total amount of messages in the queue. ***mini DISP2*** can store up to 64 message in chronological order.

7.1 - Pushbuttons function and keyboard lock

The 6 pushbuttons on the front panel, during normal operation and regardless of the chosen operating mode, perform the following functions:

Button	Function
	ACK: acknowledge, siren silencing and displaying of the first occurred event ("first out")
RESET	Request of queue reset; the confirmation must occur within 3 seconds by pressing the ACK button
↑	Show next message when the manual scrolling of messages is enabled
↓	Show previous message when the manual scrolling of messages is enabled
SCROLL M/A	Switch from the automatic to manual scrolling of messages and vice-versa. DISP2 returns to automatic scrolling at the activation of a new input
	Show the auxiliary lines of the current message (lines 3 e 4 of each message). The displaying of auxiliary lines, in automatic cyclic mode, remains until the cycle time T (set by the user) elapses. During the manual displaying mode, lines 3 and 4 remain on the display until the pressing of button ↑ or ↓.

The keyboard can be locked pushing and holding down the buttons ↑ + ↓ + SCROLL M/A for at least 3 seconds (display will show "***Keyboard Disable***" for some seconds). To unlock the keyboard press and hold down the same buttons for at least 3 seconds (display will show "***Keyboard Enable***" for some seconds).
During the programming mode, these pushbuttons perform other functions; refer to the related paragraph for details.

7.2 - Centralized alarm outputs and "first out"

As said in a previous paragraph, each message of ***mini DISP2*** may be set for the activation or less of the centralized alarm outputs (siren and flasher).
If a message has the centralized alarm outputs disabled, then it does not affect the output relays, and the activation of the related input simply will cause the displaying of the message.
If instead a message has this function enabled, then the siren output relay will be energized and the flasher output relay will be de-energized at the activation of the related input (or binary code); this means that both signaling devices will be activated.

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To silence the siren press the button (but the flasher remains activated); the siren will be restarted at the activation of a new alarm not yet inserted in the queue. Every pressing of the button will cause the displaying of the first message in the queue, that is the first occurred event ("***first out***").

To reset the flasher, all alarms in the queue must be removed by the reset sequence (if no more inputs or binary codes are still active).

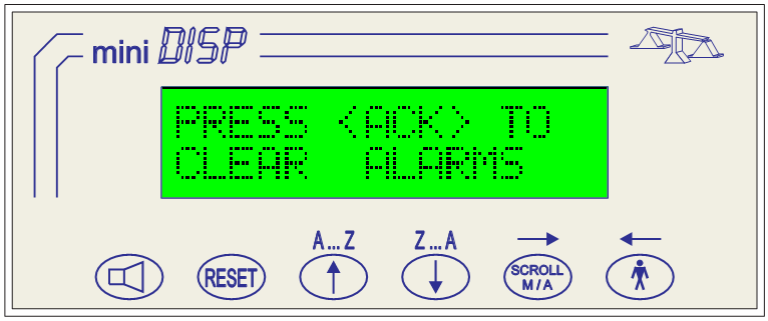
7.3 - Messages displaying in MEM or NOMEM modes

If the ***NO MEMORY*** mode has been selected (***NOMEM***) the display shows, in direct mode, the currently activated inputs in the chronological order this occurred. In binary mode, instead, the message related to the binary code currently applied to the inputs will be displayed.
If the ***MEMORY*** mode has been selected (***MEM***), the displayed message show the inputs (or binary codes) that have been activated from last reset sequence, in the chronological order as they occurred.
This last operating mode is the recommended one when handling temporary events.
Note that if ***mini DISP2*** is set for binary mode, the ***NOMEM*** setting should be avoided because, as said above, ***mini DISP2*** will show only the message related to the currently applied binary code; the ***NOMEM*** mode will be instead useful when ***mini DISP2*** is connected to an intelligent device (e.g. PLC) and ***mini DISP2*** is used as a "monitor" of the PLC.

7.4 - Reset of the queue

The reset sequence, in ***MEM*** mode, allows to clear the displaying queue; this means that all messages in the queue related to the inputs that are not still active will be removed.

The reset sequence is the following:



1. Silence the siren pressing the button
2. Press the button RESET; ***mini DISP2*** will display the message as in the figure here shown
3. Press the button within 3 second to confirm the clearing of the queue

If no confirmation occurs within 3 seconds, then the reset sequence will be automatically aborted.

8 - PROGRAMMING

8.1 - Manual programming by the panel buttons

The message and parameters programming may be executed by the front panel keyboard of ***mini DISP2*** or by the program running on a PC. To enter the programming mode of DISP2, press down at the same time the buttons  +  +  . The parameters and options that can be modified are:

1. LCD display contrast
2. MEM/NOMEM option
3. BUZZER ON/OFF option
4. Cycle time for messages scrolling
5. NO/NC setting (for direct mode only)
6. Message test (from 0 to 16 for direct ***mini DISP2***, from 0 to 255 for binary ***mini DISP2***)

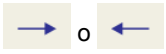
The programming procedure allows two operating modes:

- ➔ Search of the parameter or option or message to be modified
- ➔ Parameter or option or message edit

These modes can be easily identified because in the edit mode a cursor under the current character to be edited is shown (the cursor is a small line under the character); the cursor is not displayed during searching mode.

Note: direct/binary and centralized alarm outputs options cannot be changed from the ***mini DISP2*** keyboard; these options can be changed by the PC only (see next paragraph).

In the searching mode the pushbuttons perform the following functions:

Button	Function
	Next message or parameter. Hold down this button to quickly scroll forward the searching.
	Previous message or parameter. Hold down this button to quickly scroll backward the searching.
	Enter the edit mode.
	Quit programming.

In the parameter edit mode the pushbuttons perform the following functions:

Button	Function
	Increase the parameter. Hold down this button to quickly scroll forward.
	Decrease the parameter. Hold down this button to quickly scroll backward.
	Save the current parameter and go to searching mode.
	Quit programming without saving.

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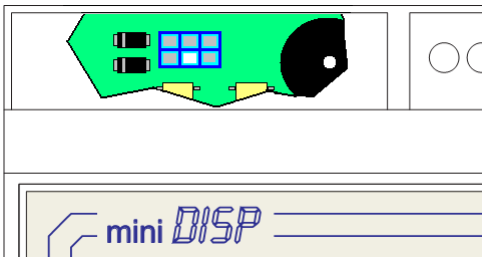
In the message edit mode the pushbuttons perform the following functions:

Button	Function
A...Z	Next character. Hold down this button to quickly scroll forward.
Z...A	Previous character. Hold down this button to quickly scroll backward.
→	Move cursor to right.
←	Move cursor to left.
+ RESET	Save the current parameter and go to searching mode.
→ + ←	Quit programming without saving.

8.2 - Programming by Personal Computer



Mini DISP2 features a connector allowing the connection to a PC through the RS232 serial port (using the proper cable). This connector (blue colored) is located under the not numbered terminal cover (see figure on this left side); to remove the cover, help yourself with a small screwdriver.

The operating parameters, options and messages of ***mini DISP2*** can be fully programmed by the PC; in addition, the reverse operation can be also performed, so it is possible to read all parameters, options and messages stored in the ***mini DISP2***.

The PC must be equipped with a program named DISPTools and distributed free of charge by **DUEMMEGI**. For detail on using DISPTools refer to the on line help of the program itself.

Notes:

- Information in this document may be modified without notice.
- For additional information and details contact: **DUEMMEGI** srl, via LONGHENA 4 - 20139 MILANO - Tel.: 02 / 57.30.03.77 Fax: 02 / 55.21.36.86 – WEB Site: www.duemmegi.it